

# LCA in Poland: Background and State-of-Art

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## 1 Introduction

Poland and neighbouring countries have lately undergone significant transformations, especially in economy. They belong to so called "transition countries", i.e. states which are now on the track of a centrally-steered market economy. Most developed of these are geographically located in Middle Europe and called – the Central and Eastern European countries (CEEC). Living in such a country, I have found it to be important to the CEEC and to Europe to try to bring this part of the continent near the specificity of the broader context of LCA. I think that

- the size of the workforce of CEEC
- their economical potential
- economical changes in this part of Europe
- integrational tendencies to EU

are also the arguments for considering this issue. The most important argument, however, is that the economy and its surroundings form the specific environment for thinking about and the creation of LCA.

## 2 Changes in CEEC

Since 1989, which is already a decade, one can notice several direct and indirect influences on the changes in economy, phenomena and processes of the CEEC:

- More freedom in information exchange
- easier, and more and more free displacement of people and goods
- increasing competition on the goods as well as service market
- the development of education at a university level, both state and private
- closer commercial contacts with the EU and other developed countries
- greater influence of western culture and style of life, including consumerism
- open access of foreign enterprises to CEEC market
- broadening of ecological consciousness in society, etc.

These processes have the consequences on the CEEC economies via:

- The creation and development of many new enterprises, mainly small and medium
- significant improvement on the consumer goods market
- destruction of the state giants, i.e. big inefficient state-owned companies
- many EU companies with their technologies, standards, culture etc. coming into the market of the CEEC
- development of ecological law and more strict execution of ecological law
- development of tourism, etc.

## 3 Consequences to the sphere of LCA

Above mentioned phenomena and processes have the different repercussions in the CEEC for the sphere which is directly and indirectly connected with LCA:

- Easier access to the EU or UN scientific and economical programmes
- appearance of new ideas and subjects environmentally oriented in education, specially at the university level
- increase in the number of ecological organisations and their strengthening
- the greater pressure of society for the respect of ecological rules
- more strict protection of data connected with ecological activities, etc. in companies.

The consequences presented here form a specific background for LCA development which, at a microeconomical level, is characterised by:

- Very complex landscape of economical organisations which are in the process of creating or changing their status, structure and place on the market
- mixed staff of organisation, including so-called veterans of "socialistic work competition" and young employees, in general without bad experiences
- continuously changing the mentality of all employees, with influences on the quality of their work and their attitude to the environment.

Considering different levels, LCAs and the scenarios for them depend on the whole surroundings which they are shaped by:

- The company itself (technological level)
- the branch in which the company works (which is connected, among other things, with the degree of privatisation and the level of development in the given branch)
- general, real orientation of national economy (declared in Poland in the 80'-ties, the environmental protection policy was replaced in the middle of the 90'-ties by sustainable development)
- the state of natural environment, continuously changing and generally slightly improving in Poland.

## 4 How LCA has come about in Poland

The first work dealing with the area of LCA was performed in Poland at the Poznan University of Technology in the middle of the 80'-ties and the paper on it appeared a bit later (KLOS, 1986). The next papers came up in 1990 where, based on these publications and dissertations, a valuation discussing machines and the influence of these devices on the environment was then published (KLOS, 1990). The methodology for a quantification of the influence of technical objects on the environment was presented there with few

examples of its application. It was an original, independently developed, method, called the cumulative environmental expenditures method, based generally on the principle that the loads of environment, connected with the manufacturing, use and liquidation of these objects, depend on the relations between parameters of resource extraction from or waste disposal to the environment and the characteristics of environmental resource in given categories. Several ideas, assumptions and structures were similar to those developed at the beginning of the 90<sup>s</sup>-ties with the well known UBP-method and in works produced at the CML.

Further activities of our small group (in 1995, Grzegorz Laskowski and in 1996, Przemysław Kurczewski joined me) have concentrated on the LCA of technical objects: Food-processing machines, compressors, water meters, etc. Recently, one more general study on the choice of transportation for Polish conditions has been performed. Since 1995, we have participated in SETAC activities: Annual meetings, case studies symposia and working groups workshops, as well as in the LCANET and CHAINET activities, with some contributions. In the LCA area, no more persons from the CEECs have been noticed. Also on a national level, at conferences and in contacts with economy, especially with the industry, we try to disseminate the knowledge about LCA, although with very modest successes.

### 5 Some Concluding Remarks

Development of science is generally driven from two sources: The interests of scientists and economy are supported by money. In our individual and national cases the first reason is obvious and the second one still does not exist. We hope

that the progress in introducing LCAs to the practice will be driven through a greater popularity of the ISO 14000 standards and forced by the advances in ISO 14040 series.

We have seen how the popularity of ISO 9000 standards has caused the increasing interest for implementation of the Total Quality Management in Polish companies. Probably the same mechanism will arise regarding LCA. Another stimulating factor will also be the accession process of Poland to European Union structures.

Processes described above are on different levels in the various CEECs. One can distinguish several groups of them:

- a) The countries with most advanced changes, such as the Czech Republic, Hungary, Poland and Slovenia,
- b) less developed countries such as Croatia, Estonia, Latvia, Lithuania and Slovakia,
- c) the other CEEC.

One can forecast that processes which are now in development in countries belonging to group A will appear further in B and later on in the countries of group C. In this paper, I concentrated on the situation in Poland. Generally, it is more or less similar to the situation in countries which belong to group A.

### 6 References

- KŁOS, Z. (1986): Rozważania o celowości wyznaczania środowiskowego kosztu istnienia maszyn i urządzeń. Zeszyty Naukowe Politechniki Poznańskiej, seria Maszyny Robocze i pojazdy, 26, 75-86
- KŁOS, Z. (1990): Sozologiczność obiektów technicznych. Studium wartościowania maszyn i urządzeń na środowisko. Wyd. Politechniki Poznańskiej, Poznań, p. 133

## Conference Announcements

### Tribology in Environmental Design 2000 – The Characteristics of Interacting Surfaces A Key Factor in Sustainable and Economic Products

First International Conference, 3 – 6 September 2000, Bournemouth, United Kingdom

This international event is organised by the Tribology Design Research Unit within the School of Design, Engineering and Computing, Bournemouth University. It is also co-sponsored by the Institution of Mechanical Engineers (IMechE) and supported by the Institution of Engineering Designers (IED) both of the United Kingdom.

The scope of the conference is to project as well as environmentally assess tribological properties within technological products. The objective is to assist the designer to predict the life cycle consequences of these properties early in the product design phase. The choice of materials between interacting surfaces in relative motion together with the type of lubricant used are key in the product's life cycle, particularly in the use phase. The study of wear and the ensuing heat of friction have direct as well as indirect environmental consequences. These environmental costs incurred during a product's use are committed by early design decisions. Known engineering domains, such as tribology, need to be integrated with the perhaps more traditional design issues in an attempt to address key aspects in holistic life cycle design.

The conference seeks to discuss papers on topics related to

- Life-oriented products
- Product life design tools
- Energy studies in product use phase
- Surface quality
- Surface engineering
- Advanced materials
- Sustainable product development
- Life cycle assessment for optimised products
- Environmental impact assessment
- Lubricants
- Analytical studies

as well as other topics which fall within the scope of the conference.

It is the purpose of this conference to draw together expertise from academia and industry alike to discuss existing ideas as well as new research on the multi-disciplinary fields highlighted above. In the event that you may require further information or consider yourself suitable to contribute or participate in this event, please do not hesitate to visit our website on [www.designforlifecycle.org/ted2000](http://www.designforlifecycle.org/ted2000). Further information may also be obtained by email on [red.info@bournemouth.ac.uk](mailto:red.info@bournemouth.ac.uk).